

The White-tailed Eagle (*Haliaeetus albicilla*) in the Czech Republic

Tomáš BĚLKA & David HORÁK

Abstract: The paper summarizes development of the White-tailed Eagle (*Haliaeetus albicilla*) population in the Czech Republic (CR). The White-tailed Eagle ceased breeding in the CR at the end of the 19th century. The last known breeding occurred in South Bohemia in 1882. After about a hundred years' break, in the mid-80s of the 20th century, the species started to breed in two core areas in the CR (South Bohemia and South Moravia). The breeding population in South Bohemia was backed up by a reintroduction project (a total of 9 individuals released 1978–1985). The White-tailed Eagle subsequently colonized almost the whole country. In 2000, 25 territories were occupied, in 2005 44 (76% increase) and in 2007 up to 55 breeding territories were recorded (120% increase in 7 years). The bulk of the population breeds in lowland areas with a high representation of ponds or wetlands. The highest altitude at which breeding has been confirmed is 700–750 m a.s.l. The most important wintering places are South Moravia and the Třeboňsko region in South Bohemia. Birds from Poland (6), Finland (2), Estonia (1) and Germany (1) have been recorded in the CR. The diet of the White-tailed Eagle in the CR consists mainly of fish and waterfowl. Locally, a higher representation of mammals can be recorded (mainly carcasses or grallochs of hoofed game, or Common Vole *Microtus arvalis*). To protect the eagles, 3 SPAs within the NATURA 2000 project were declared (Třeboňsko, Pálava, Nové Mlýny middle reservoir). A significant conservation problem of the last years is poisoning by carbofuran. During 2003–2008, 16 individuals were proved or supposed to be poisoned in the CR. In the same period, two cases of shot eagles were reported and two nests were destroyed by man. A complete bibliography on the White-tailed Eagle in the CR is included.

Key words: White-tailed Eagle, *Haliaeetus albicilla*, breeding population, wintering population, Czech Republic.

This paper is dedicated to the memory of Petr Horák (1956–2005), who made a great work for the conservation of White-tailed Eagles in our country.

Introduction

It is surprising that no long-term nationwide co-ordinated project on research and conservation of the White-tailed Eagle is running in the Czech Republic (hereafter CR). Therefore, we decided to elaborate a paper concerning this bird species evaluated in the CR as 'critically endangered'. We hope that the summarized results will help to uncover gaps in research and conservation.

Methods

Data summarized in this paper were collected mainly from literature and by personal contact with ornithologists who work on that species. Ringing results were kindly provided by the Prague Ringing Centre. Last but not least, this paper comprises own data of the authors.

The structure of the paper follows the scheme provided by the promoters of the conference 'The White-

tailed Eagle in the Heart of Europe' held in Illmitz, Austria, on 17–18 November 2007, in order to make the results of different countries comparable.

Historical development of projects on the White-tailed Eagle in the CR

There are currently no projects on the White-tailed Eagle running in the CR. In the past, a project on the release of eagles bred in captivity was carried out in South Bohemia with a view to their reintroduction to historical breeding sites. It was partially financed and methodically conducted by the State Nature Conservation Authority. During 1978–1985, nine eagles were released in the Třeboň region (4 males and 5 females) and in 1989 one male was released in South Moravia. The birds were obtained from the German breeder Claus Fentzloff. Currently, the White-tailed Eagle is monitored only as part of a NATURA 2000 project in three Special Protection Areas (SPAs): the Třeboň region, Pálava and the middle basin of the Nové Mlýny reser-

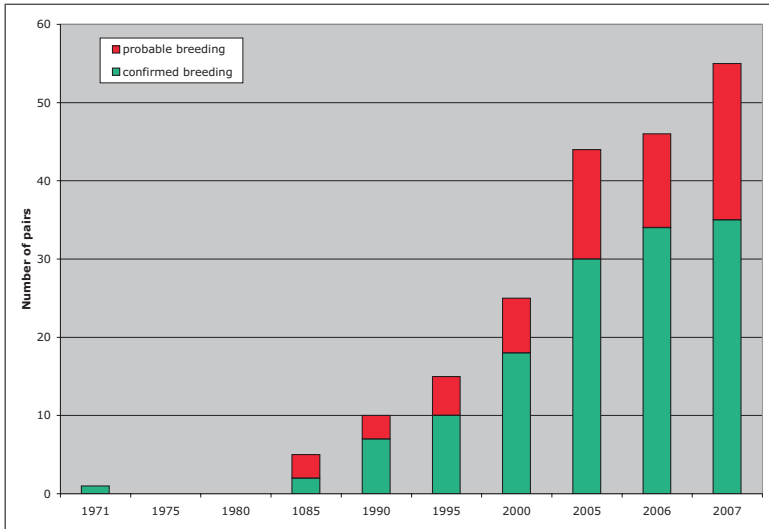


Fig. 1: Development of the White-tailed Eagle breeding population in the Czech Republic. — *Entwicklung der Brutpopulation des Seeadlers in der Tschechischen Republik.*

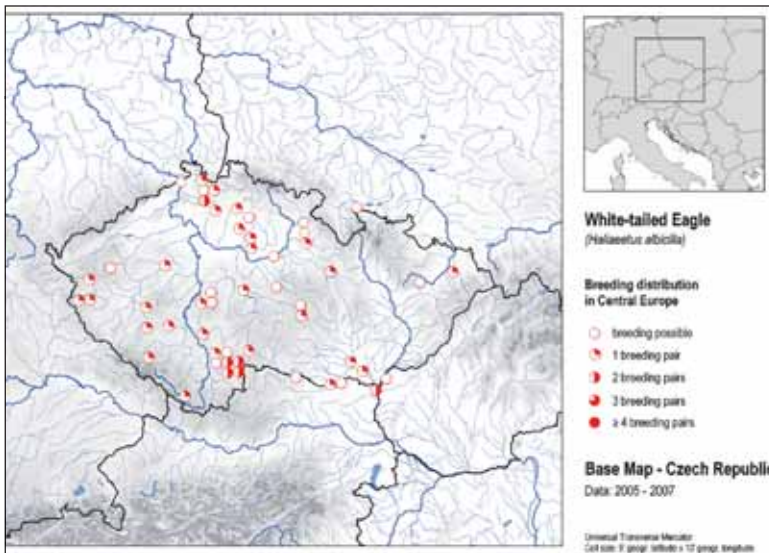


Fig. 2: Breeding distribution of the White-tailed Eagle in the Czech Republic 2005–2007. — *Brutverbreitung des Seeadlers in der Tschechischen Republik 2005–2007.*

voir (see e.g. HORA et al. 2002). Every three years, several other SPAs – or other localities occupied by the White-tailed Eagle – are included in the monitoring scheme. The first extended monitoring was carried out in 2006.

Population development in the CR

Despite the fact that the White-tailed Eagle is a bird of remarkable size, very few relevant historical data can be found in old ornithological literature concerning the breeding of White-tailed Eagles in the CR. We know for sure that the species bred for the last time in the České Budějovice region near Hosín village in Stará obora in

1882 (ŠÍR 1890). According to unconfirmed data, it was supposed to breed in South Moravia in the vicinity of the towns Břeclav and Lanžhot (mainly in today's area of the confluence of the rivers Morava and Dyje) at least until the 20s of the 20th century (e.g. HAPLA 1912, KARÁSEK 1922, 1923, KUX 1944). After that the White-tailed Eagle became a very rare species in the CR that could possibly be observed only outside the breeding season. During the 2nd half of the 20th century the winter population began to increase especially in South Bohemia and Moravia. During that time, wintering eagles were regularly fed, particularly in the South Bohemian pond basin, in order to make the locality more attractive for breeding. In 1971, one nest was reportedly found in Velechvínské poleš in South Bohemia. However, the nest fell down – as did the eggs it contained (unverified record; HLÁSEK 1979). In the same year, an adult White-tailed Eagle was observed two times at another locality in South Bohemia (Ženich fishpond, Nová řeka, ŠŤASTNÝ 1974). The next breedings in two different localities in South Bohemia (Velká Holná and Velký Tisý) probably occurred in 1981 and 1982. Two years later, in 1984, a nest was found occupied by a pair of captive bred birds which had been released during the release project in 1978–1985. This pair bred successfully for the first time in 1986 (e.g. ANDRESKA 1986, TRPÁK 1987, ŠEVČÍK 1985, 1987a, 1989). In 1984, another breeding (though unsuccessful) occurred in South Moravia. Here, however, the first young successfully fledged as late as 2004 – after more than 30 unsuccessful attempts (HORÁK 2003, 2004). Thereafter, the White-tailed Eagle started to spread across the CR. In 1990, the first breeding was recorded in the Česká Lípa region (North Bohemia); the pair had occupied the locality continuously since 1986. The next region colonized by the White-tailed Eagle was North Moravia where a pair of White-tailed Eagles had been recorded in Oderské hills since 1993. Unfortunately, it was virtually impossible to find the nest, since the breeding site is part of a military training area. Other pairs in North Moravia bred in the Opava region in 2004 and not far from Ostrava town in 2006. In 1994, one pair bred near Dymokury town in North Bohemia and three years later, in 1997, another pair occupied a locality near Jičín town in Eastern Bohemia. In the same year, the first breeding occurred in the North Bohemian Rumburk region and since 1998 they occupied the southwestern edge of the Brdy Mountains, West Bohemia. A rapid increase in population numbers as well as the colonization of new localities took place mainly at the turn of the millennium (see fig. 1). In 2000, 25 territories were occupied, five years later they were already 44 territories (76% increase) and in 2007, in total 55 occupied territories were recorded (120% increase in 7 years; see fig. 2).

The Working Group on Protection and Research of Birds of Prey and Owls in the CR focused mainly on collecting data on the breeding success of raptors and owls. According to data provided by group members, we can assess that on average 1,02 young fledged per breeding pair in the CR during 1982–1998 ($n=42$, HUDEC & ŠASTNÝ 2005). Breeding success in South Bohemia during 1991–2000 was assessed as 1,31 young per breeding pair, or 1,53 young per successful breeding pair (according to PROCHÁZKA 2002). Corresponding results were obtained throughout the CR in 2005–2007. During that period, on average 1,2 young fledged per breeding pair or 1,63 young per successful breeding pair ($n=56$, see tab. 1).

We estimate the maximum possible number of territorial pairs in the CR at no less than 100 pairs.

Pollutant analysis

No analyses concerning pollutants in White-tailed Eagles have been performed in the CR.

Artificial incubation

No eggs taken from wild nests have been artificially incubated in the CR.

Feeding biology

There is no comprehensive study concerning the feeding biology of the White-tailed Eagle in the CR. There are only random observations of birds feeding on some prey and a few data from stomach contents of shot individuals and nest controls.

In South Bohemia, the major prey is fish, mainly Common Carp (*Cyprinus carpio*). Young eagles are often observed near spots where captive Mallards (*Anas platyrhynchos*) are released. During controls of breeding sites at the end of the season, the most often found prey remnants were birds' feathers (other residues were very rare, probably eaten up by boars and foxes). The most frequently found species were Mallard, Coot (*Fulica atra*) and Black-headed Gull (*Larus ridibundus*). Others species recorded include Gadwall (*Anas strepera*) and Brown Hare (*Lepus europaeus*, PROCHÁZKA 2002). ČERNÝ (1961) recorded eagles digging dead fish from the ice in winter. During 1999–2007, data of 20 food items were collected during 11 controls of the breeding sites and their vicinity (mainly nest controls) in South Moravia (HORÁK et al. unpubl.): fish – 12 inds.: Northern Pike (*Esox lucius*) – 2 inds., Common Bream (*Abramis brama*) – 4 inds., Common Carp – 1 ind., 1 undetermined *Cyprinidae*, Yellow Pikeperch (*Stizostedion lucioperca*) – 2

Tab. 1: Breeding success of the White-tailed Eagle in the Czech Republic. — *Bruterfolg des Seeadlers in der Tschechischen Republik.*

Year	Mean number of young/ breeding pair	Mean number of young/successful breeding pair	Total number of nests
1982–1998	1,02	?	42
1991–2000	1,31	1,53	?
2005	1,13	1,42	15
2006	1,13	1,50	16
2007	1,28	1,68	25

inds., fish indet. – 2 inds.; birds – 4 inds.: Common Pheasant (*Phasianus colchicus*) – 1 female, Black-headed Gull – 1 ind., pigeon (*Columba* sp.) – 1 ind., Long-eared Owl (*Asio otus*) – 1 ind.; mammals – 4 inds.: Brown Hare – 2 ad. and 2 juv.. In some localities (especially in the middle Nové Mlýny reservoir) wintering White-tailed Eagles often hunt shot wounded geese, mainly Bean Goose (*Anser fabalis*) and White-fronted Goose (*A. albifrons*) during the hunting season (i.e. 16 August–15 January, CHYTIL & MACHÁČEK 2000). During about the past 10 years, large concentrations (up to 10 individuals) of White-tailed Eagles were recorded in pheasantries during the pheasant hunting season (16 October–31 December) where they feed on shot pheasants as well as in game-preserves where they feed on grallochs (intestines) and other remnants of hoofed game (mainly Red Deer *Cervus elaphus*, Fallow-deer *Dama dama* and Moufflon *Ovis musimon*) during the hunting season (approx. August–January). Also feeding on carcasses on roads has been recorded. Birds from the roosting site at the confluence of the rivers Morava and Dyje forage in the Austrian Bernhardsthaler Ebene plateau, presumably on Common Voles (*Microtus arvalis*). The constantly high population density of this vole species in the area is due to the high proportion of fallow land.

Analysis of nests and breeding habitat

Neither analyses of nests, nest-trees or nesting habitats have been carried out in the CR nor are data systematically collected due to the fact that no official project concerning the White-tailed Eagle is currently running in the CR. However, it is possible to gather data retrospectively from different ornithologists and analyse them.

Generally speaking, nests in the CR are situated in fishpond regions with vast forest complexes. The White-tailed Eagle prefers loose forest stands older than 100 years in the vicinity of open waters.

In South Bohemia, 80% ($n=13$) of nests were situated in forests older than 100 years; the average age-class of trees was 101–120 years. Nests were situated on average at 24 m height (range: 18–37 m, $n=19$). 80% of

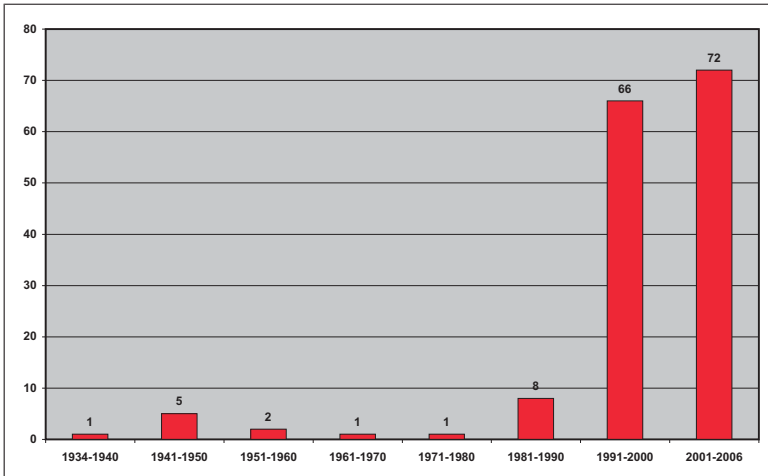


Fig. 3: Numbers of White-tailed Eagles ringed in the Czech Republic 1934–2006. — Anzahl beringter Seeadler in der Tschechischen Republik 1934–2006.

nests were located no further than 500 m from open water (mean distance: 439 m, range: 50–2.100 m). The forests in South Bohemia consist mainly of Spruce (*Picea abies*, 39%), Scotch Pine (*Pinus sylvestris*, 45%), Silver Fir (*Abies alba*, 1%), European Larch (*Larix decidua*, 1%), Alder (*Alnus glutinosa*, 10%), Beech (*Fagus sylvatica*, 1%) and other species (3%). Out of the total of 29 nests recorded in that region, 56% were situated on Pine and 32% on Spruce. Odd nests were built on Silver Fir, European Larch, Alder and Beech. The eagles choose those tree species for nesting even in cultural forest stands. Nests in younger cultural stands are often less stable and have to be stabilized during the breeding season or later. All nests built on tree species other than Pine were built either on solitary trees or trees on the very edge of woods or on trees in open old-growth stands (PROCHÁZKA 2002).

Fig. 4: Ringing (black circles) and recovery locations of Czech-born birds (only movements further than 20 km are given). Blue circles indicate birds recovered at < 4 years of age, red circles represent birds ≥ 4 years old. Taken from Procházka (2008). — Beringungs- (schwarz) und Fundorte von in Tschechien geborenen Vögeln (nur Bewegungen weiter als 20 km werden berücksichtigt). Blaue Kreise kennzeichnen Wiederfunde von Vögeln < 4 Jahren, rote Kreise Vögel ≥ 4 Jahre. Nach Procházka (2008).

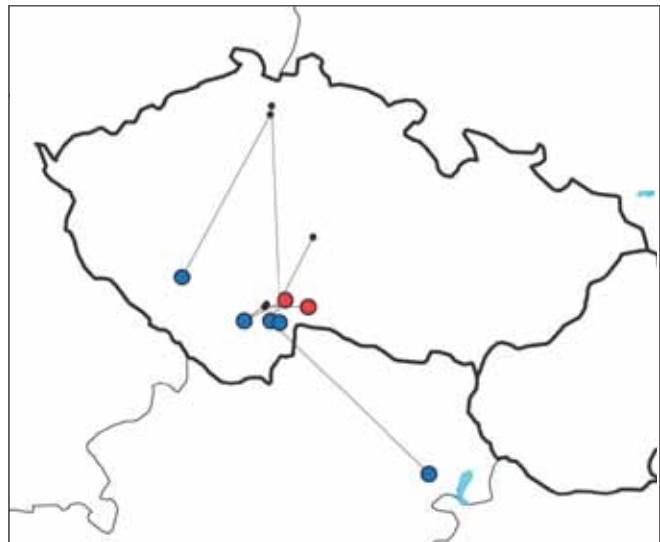


Fig. 5: Ringing locations of birds ringed abroad as nestlings and recovered in the CR outside (blue circles) and during (red circles) the breeding season. Taken from Procházka (2008). — Beringungsorte von im Ausland beringten Vögeln, die in der Tschechischen Republik außerhalb (blaue Kreise) und während (rote Kreise) der Brutsaison gefunden wurden. Nach Procházka (2008).



In South Moravia, White-tailed Eagles breed mostly in floodplain forests of alluvial plains, in old forest stands in the vicinity of big rivers, ponds and/or dam reservoirs (eight out of 11 localities). The other localities (3) are situated in uplands (1x deciduous wood, 1x mixed and 1x mostly pine wood). Out of 19 nests, nine were situated on Oaks (*Quercus* sp., one utterly dry), six on Poplars (*Populus* sp.), two on Pines, one on Ash (*Fraxinus* sp.) and one on Spruce.

Most of the nests were situated at 20–30 m height. The lowest nest was located on an oak tree at a height of 12 m. Concerning the origin of the nests, the following data were collected in South Moravia: artificial nest (3x), nests of the Black Stork (*Ciconia nigra*, 3x), White Stork (*C. ciconia*, 2x) and in one case an old nest of the Black Kite (*Milvus migrans*) was occupied (HORÁK 2003, 2004, 2006, HORÁK et al. unpubl.).

In Central Bohemia, a nest built on an old nest of the Grey Heron (*Ardea cinerea*) in a heron colony was recorded in 2007 (L. Viktora, pers. comm.)

The highest situated White-tailed Eagle nests were recorded in the Brdy Mountains at 700 m a.s.l. and near the dam reservoir Lipno in the Šumava Mountains at 750 m a.s.l. (ŠTASTNÝ et al. 2006).

The use of high altitude breeding sites has also been confirmed for Poland close to the Czech border. In 1999, a nest was found at 720 m a.s.l. in the Karkonosze Mountains (PALUCKI 1999). In 2004, a nest was found at 780–800 m a.s.l. in the Jizerské Mountains (GRAMSZ et al. 2004).

Ringling

Since the CR does not take part in any international White-tailed Eagle colour-ringing project so far, birds are marked with aluminium rings. In total, 156 Eagles have been ringed since the opening of the Prague Bird Ringing Centre in 1934. During 1981–2006, 142 young and four adults were ringed (146 in total, see fig. 3 and the appendix for an overview).

During recent years, 10–15 young are annually ringed in the CR.

In total, 20 recoveries were recorded so far (figs. 4 and 5, PROCHÁZKA 2008), including one from Slovakia (note that the Prague Bird Ringing Centre covered both the Czech and Slovak Republics until 2002). Nine birds were ringed in the CR and 11 were ringed abroad and found in the CR (six birds from Poland, three from Finland, one German and one Estonian bird). Rings of five birds were read, five eagles were found dead but we do not know the death causes. Another four birds were poisoned (one of them survived), three shot and three found dead after a collision with electricity wires (cf. fig.

6). All nine eagles ringed in the CR and observed again did not move a great distance from their birth places. The maximum distance was 177 km. Therefore, it is quite obvious that the Czech population is sedentary, i.e. the birds do not move far from their place of birth. Furthermore, no distant moves were recorded during winter months either. On the other hand, some fishpond regions (South Bohemia and South Moravia) serve as regular wintering sites for the North European population, which is sustained by the fact of finding Estonian and Finnish birds from the far north in the CR. The most distant bird encountered in the CR was a bird from Finland (2.114 km), which was found poisoned at the age of three years in East Bohemia in February 2004.

Winter census

Winter censuses covering the whole CR have never been carried out. The first recorded winter occurrence of White-tailed Eagles in the Natural Nature Reserve 'Velký a Malý Tisý' in the Třeboň fishpond basin during 1953–1961 were made by ČERNÝ (1961). The highest number recorded then was six individuals.

The next census was carried out on 10–11 March 1979 in South Bohemia (HLÁSEK 1979). On the basis of those censuses it was estimated that ca. 15 eagles wintered in the most exploited areas. During three winters (1982/83–1984/85), the Administration of the Protected Landscape Area Třeboňsko organized seven White-tailed Eagle censuses within the Protected Landscape Area and partially also in fishponds near České Budějovice, South Bohemia. Up to 20 birds wintered in the Třeboň region and up to five birds in the České Budějovice area (HORA, pers. comm.). The newest data from South Bohemia show that 40–50 individuals wintered in Třeboňsko SPA during 1998–2002 (HORA et al. 2002) and 50–60 individuals during the winter 2005/06. (ŠEVČÍK, pers. comm.). Data from the newly proposed SPA Českobudějovické rybníky (fishponds of the České Budějovice region) show that 4–8 individuals wintered in that locality in 2001 (HORA et al. 2002).

In South Moravia, the winter population has been surveyed with a fluctuating intensity since 1982. Organized winter censuses have been carried out since winter 1997/98 (MRLÍK 1999, 2000, 2002). In 1982–1992, the South Moravian winter population was estimated at 7–20 individuals – however, numbers increased during later years. In mid-February 1997, 44–60 individuals gathered at the middle basin of the Nové Mlýny reservoir alone (CHYTIL 1997). In the winters 1997/98 and 1998/99, the South Moravian population was estimated at 44 individuals (MRLÍK 1999, 2000) and in winter 1999/2000 at 48 individuals (MRLÍK 2002).

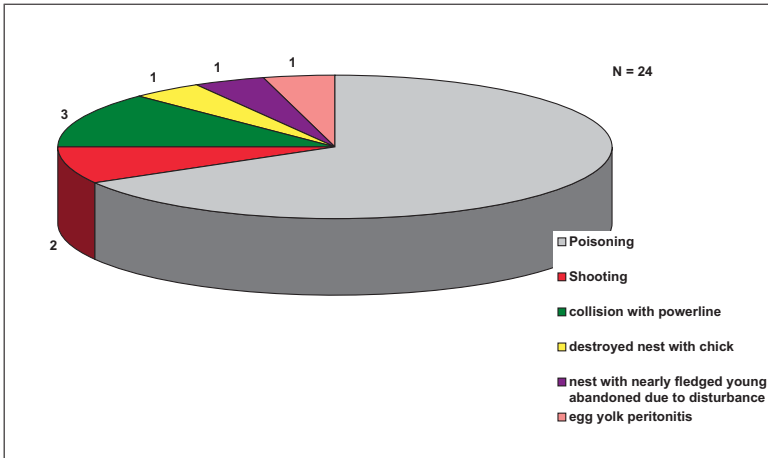


Fig. 6: Causes of deaths and injuries of White-tailed Eagles in the Czech Republic. — Todes- und Verletzungsursachen von Seeadlern in der Tschechischen Republik.

Similar censuses were carried out in winters 2006/07 (39–42 individuals) and 2007/08 (82–84 individuals, MRLÍK unpubl.). For winter 1997/98, the author even tried to estimate the whole Czech winter population (based on the data collected from members of the Working Group on Protection and Research of Birds of Prey and Owls) and proposed at least 115 individuals (MRLÍK 1999).

Fragmentary pieces of information concerning winter occurrences of the White-tailed Eagle are obtained every year through the International Waterfowl Winter Census (IWC). However, since White-tailed Eagle censuses require a specific method (e.g. survey of roosting places), results obtained during the IWC are not very representative.

Persecution

One of the major threats for the Czech White-tailed Eagle population is illegal persecution. The 'Free Wings' database administrated by the Czech Society for Ornithology refers to about 20 persecution incidents regarding White-tailed Eagles during 2003–2008. Two birds were directly shot, one nest was destroyed, one nest with an almost fledged young was abandoned and all other 16 birds proved or were supposed to be poisoned. Fig. 6 shows the summarized causes of deaths or injuries based on the known persecution and ring recovery data. At least six of them are supposed to belong to the Czech breeding population. In those cases where chemical analyses were performed, the poisoning agent was diagnosed as the highly toxic carbofuran which is used as an agricultural pesticide. However, the given numbers represent only the lower limit of all persecution cases since most of them remain undetected. Thus, illegal poisoning is the most serious threat for the

White-tailed Eagle population and is supposed to be the limiting factor for population growth and the colonization of new localities. Only two of the persecuted White-tailed Eagles (one shot and one poisoned, both in 2006) could be rescued and were subsequently released. No culprit was ever found and punished for these offences, mainly because of the ignorance of the State Police.

Blood analysis

In total, 15 blood samples were taken from young in the nest (13 individuals) or from young fledged in the CR and found dead later (two individuals). Another 13 samples have been obtained for DNA microsatellites analysis from dead eagles of unknown origin found in the CR. The results were published (LITERÁK et al. 2007). Using data collected through DNA microsatellites, no population structure was revealed through Bayesian and cluster analyses with an existing Hardy-Weinberg equilibrium – which suggests mixed panmictic populations of White-tailed Eagles in the Czech Republic and Slovakia. While the analysis of genetic diversity showed no difference between the recovered populations in the southeastern CR and those persisting in Slovakia, there was a genetic diversity between eagles of the southeastern subpopulation and those from other parts of the CR.

Protection

The White-tailed Eagle is evaluated as 'strictly protected species' according to § 48 of the Nature and Landscape Protection Act No. 114/1992. Supplement No. 3 of Regulation No. 395/1992 evaluates the White-tailed Eagle as 'critically endangered'. As strictly protected species, the White-tailed Eagle as well as its habitat is protected in all his developmental stages in both natural and artificial sites. It is forbidden to intervene in its natural development, especially to catch, disturb, hurt or kill a bird. It is not allowed to collect, destroy, damage or transport any of its developmental stages or to transport its home.

In December 2004, in total three new SPAs of the NATURA 2000 system concerning the White-tailed Eagle were declared in the CR: Třeboňsko, Pálava (breeding and wintering site) and the Nové Mlýny middle reservoir (wintering site). In those SPAs, all forestry activities (both main and intermediate planned felling and mechanized silvicultural operations) within a 300 m radius of known occupied nests are prohibited during 1 January–15 July. If necessary, 'temporarily protected areas' outside SPAs can be declared to protect breeding sites of White-tailed Eagles.



Fig. 7: Třeboňsko (Protected Landscape Area and SPA), South Bohemia – typical breeding habitat. The area covered by the picture holds two regular breeding pairs (Photo: J. Ševčík). — *Třeboňsko (Landschaftsschutzgebiet und SPA, Süd-Böhmen – typisches Bruthabitat. Der Bildausschnitt zeigt den regelmäßigen Brutplatz zweier Paare.*



Fig. 8: Třeboňsko (Protected Landscape Area and SPA), South Bohemia. Favourite wintering ground (Photo: J. Ševčík). — *Třeboňsko (Landschaftsschutzgebiet und SPA, Süd-Böhmen. Bevorzugtes Überwinterungsgebiet.*



Fig. 9: Soutok SPA, the area at the confluence of the rivers Morava and Dyje. In the area covered by picture, more than 30 White-tailed Eagles roosted during the winter 2007/08 (Photo: P. Macháček). — *Der Soutok (Special Protection Area, SPA) an der Mündung der Flüsse March und Thaya. In dem auf dem Foto abgebildeten Bildausschnitt rasteten im Winter 2007/08 mehr als 30 Seeadler.*



Fig. 10: The Nové Mlýny reservoirs, South Moravia. At the middle basin (SPA and Nature Reserve), up to 60 individuals gathered during the last winters (Photo: P. Macháček). — *Die Stauseen von Nové Mlýny, Südmähren. An dem mittleren Reservoir (SPA und Naturschutzgebiet) versammelten sich in den letzten Wintern bis zu 60 Individuen.*



Fig. 11: White-tailed Eagles at the middle Basin of the Nové Mlýny reservoirs, 18 February 2003 (Photo: P. Macháček). — *Seeadler an dem mittleren Stausee von Nové Mlýny, 18. Februar 2003.*

Fig. 12: The first 'modern-times' nest of White-tailed Eagles in South Moravia, originally built by a Black Stork and occupied by eagles in 1984 and 1985 (Photo: P. Horák). — Der erste "neuezeitliche"-Seeadlerhorst in Südmähren, ursprünglich von einem Schwarzstorch, wurde von den Adlern 1984 und 1985 besetzt.



Theoretically, according to the law, birds should neither be disturbed during the breeding season nor should they be hurt or killed. Despite that, several nests are abandoned due to disturbance mainly by forest workers or other people every year. Birds are even killed – either shot or poisoned by carbofuran (see chapter 'Persecution').

Nest guarding

Unlike nests of the Peregrine Falcon (*Falco peregrinus*), nests of White-tailed Eagles have never been subject to organized guarding. There are several reasons for that: (1) the relatively high expenses, (2) the quite difficult and demanding organization, and (3) a relatively low interest among breeders and falconers in that species. There is practically no tradition in oological collections – so collecting eggs from the nests is of little threat to this species. Furthermore, today's population density makes nest guarding unfeasible even for the most endangered nests.

Artificial nests

Artificial nests for the White-tailed Eagle were provided mainly in the Třeboň region, South Bohemia, as

part of the release-project of captive-bred birds. In total, more than 10 artificial nests were built there since the early 1980s. However, since only one of them was occupied during one breeding season, this matter was dropped. In one case, a pair built its own nest ca. 50 m from the artificial one. The eagles definitely prefer using their own old nests or building a new one themselves (ŠEVČÍK 1997). Currently, existing natural eagle nests are stabilized in order to prevent their collapse during the breeding season and eliminate possible losses.

During the last years, several artificial nests were built also in other parts of South Bohemia e.g. in the Tábor region or Lipno reservoir in the Šumava Mountains – mainly in cases of unstable natural nests or nests fallen down during windstorms (HORA, pers. comm.).

In South Moravia, in total four artificial nests were built (in the years 1985, 1989, 1992 and 1994). One was never occupied, one was occupied during one breeding season, the third one was occupied during 1986–1994; however, no young fledged from those nests. The last artificial nest built in 1992 was occupied for two subsequent years and then collapsed. Its base was rebuilt in 1999 and a pair of White-tailed Eagles bred there regularly during 1999–2008. However, only three breeding seasons were successful (e.g. HORÁK 2003, 2004, 2006).

In East Bohemia, four artificial nests were built in 1995 of which none was ever occupied.

Winter feeding

The feeding of wintering White-tailed Eagles has a good tradition especially in South Bohemia. The first feeding place was established already during 1961–1967. Since 1974, winter feeding has been conducted regularly and annually in the Protected Landscape Area Třeboňsko. Birds are fed mainly with fish, mostly Common Carp (ŠEVČÍK 1997). During one season – mid-December to the beginning of March – ca. 500 kg fish are fed to the eagles. Fish are placed on the ice of the pond and on the surrounding meadows. The highest amount of feeding eagles recorded at one feeding place was 14 individuals. Other species were observed feeding, too: Common Buzzard (*Buteo buteo*), Grey Heron, *Corvidae* and even Otter (*Lutra lutra*, ŠEVČÍK in litt.). There is no other site in the CR where eagles are regularly fed during the winter. Since the CR joined the EU in 2004, issues concerning feeding are partially covered by European law – Regulation (EC) No 1774/2002 of the European Parliament and of the Council of 3 October 2002 laying down health rules concerning animal by-products not intended for human consumption (articles 23 and 24).

Captive breeding

No captive-bred birds have been released in the CR except for the 10 eagles from the German breeder Claus Fentzloff in 1978–1989. It is very difficult to obtain accurate numbers of White-tailed Eagles held in captivity. Regrettably, there is no central register of eagles bred in captivity and neither the competent authorities nor the breeders themselves are urged by any means to keep such registers. Therefore, we can only collect bits and pieces of information from different sources and the result is fragmentary and incomplete. As per 31 December 2006, eight pairs of White-tailed Eagles were held in captivity in six zoos (Brno, Hodonín, Chomutov, Jihlava, Liberec and Ostrava). So far, two young have been bred in captivity in Chomutov and Liberec (Yearbook of the Union of Czech and Slovak Zoological gardens 2006). However, nine males and eight females are registered in the zoos' databases in contrary to the Yearbook. Moreover, another 15 birds were deposited with private breeders. The breeding of White-tailed Eagles in zoos is financially endowed by the Ministry of Environment.

As per mid-October 2007, information of 35 White-tailed Eagle were found in the 'Central Register of Raptors and Owls' kept by the Agency for the Nature Conservation and Landscape Protection of the Czech Republic (AOPK ČR; scientific body of CITES). 28 eagles were kept in zoos of which six were exported and another seven birds were kept by private breeders. A certificate of registration was issued only for some of the eagles and therefore, the AOPK loses track about their actual ownership. Despite the fact that those birds were bred in zoos, they may currently be owned by private persons and vice versa without record. Moreover, there are major problems with reporting changes (breeding young, deaths, losses, change of owner etc.) since this duty is not obligatory and therefore data in the register are incomplete.

Issuing licences for breeding White-tailed Eagles as 'specially protected' and 'critically endangered' species was under the responsibility of the Ministry of Environment until 2004. Since then, it is in competence of the AOPK. During 2004–2007, eight licences were issued to six different bodies. Licences were applied for 14 individuals (11 in zoos, two with private breeders and one held by a NGO).

In total, two White-tailed Eagles are registered by falconers (according to data from the Falconers' Club at the Czech Hunting Union). Since the species is not used for falconry purposes, there is no obligatory duty to register White-tailed Eagles and therefore the numbers might be underestimated.

A free-hand estimate regarding the number of White-tailed Eagles held in captivity in the CR

amounts to 30–50 individuals. Generally, we can claim that in the CR several tens of White-tailed Eagles are kept in captivity. Serious difficulties in obtaining any relevant data concerning numbers of White-tailed Eagles (or any other species) kept in captivity in the CR (as well as in other countries) prove the usefulness of establishing a database of captive-bred birds led by an appropriate governmental body.

Public collections

There is no central database of White-tailed Eagle specimens in public collections (e.g. museums) existing in the CR. We carried out a questionnaire asking 76 museums in the CR (both nation-wide and regional) after inventoried White-tailed Eagles. Out of 53 replies, 29 were negative. The remaining 24 museums hold 99 stuffed specimens; nine study skins and only three eggs are deposited (note: in some of the museums, including large ones such as the National Museum Prague, no egg catalogue does yet exist). Since data from ca. one third of the museums is missing, we can only estimate the number of White-tailed Eagle specimens in public museum collections in the CR very roughly at no less than 110. The most comprehensive White-tailed Eagle material is held by the following museums: National Museum of Agriculture Prague – Museum of Forestry, Hunting and Fishery, Hunting Lodge Ohrada (15 mounts), ORNIS – Ornithological Station of Comenius Museum Přerov (11 mounts, five study skins), Moravian Museum Brno (eight mounts, one study skin, one egg), National Museum Prague: eight mounts, one study skin), Silesian Museum Opava (six mounts, one study skin, one egg), Museum of South Bohemia in České Budějovice (five mounts, one study skin), Museum of Eastern Bohemia in Pardubice (five mounts). Some more specimens may be present e.g. at university collections. Besides, some old White-tailed Eagle mounts are certainly exhibited in castles or chateaus as hunting trophies.

Public relations

In 2006, the White-tailed Eagle was declared 'Bird of Year'. Simultaneously, a brochure was issued to introduce this species to the wide public (ŠEVČÍK & VERMOUZEK 2006). Many notices were made on the radio and in different papers about the White-tailed Eagle as 'Bird of the Year' – however, there is no accurate record of those notices.

International cooperations

The CR does not take part in any international programme concerning the White-tailed Eagle except for a

trilateral mid-winter census in co-operation with colleagues from Austria and Slovakia which has been conducted annually since January 2003.

Future projects

There is no long-term project on the White-tailed Eagle in preparation in the CR. In 2008, a colour-ringing project was started in terms of one of the mid-European schemes. Hopefully, a nationwide database of breeding pairs/localities will be established as well as a database of captive-bred birds (see above). We believe that nesting success could be markedly increased as well through a nationwide project aimed at direct nest-searches and subsequent negotiations with landowners.

Acknowledgements

This paper would never have come into being without the aid of following ornithologists: V. Beran, D. Boucný, L. Boucný, K. Broulík, P. Cehláriková, G. Čamlík, J. Chytil, V. Gahura, J. Hora, V. Kovář, P. Kurka, J. Mráz, V. Mrlík, F. Pojer, J. Procházka, P. Řepa, J. Ševčík, K. Šimeček, V. Škorpíková, V. Šoltys, J. Veselý, P. Voříšek and L. Urbánek. We are very grateful for their help in providing data from regions they survey.

Data provided by the Bird Ringing Centre of the National Museum in Prague were used in this study. The authors express their thanks to all the ringers who contributed on data collection as well as to J. Cepák and P. Klvaňa from the BRC NM Prague.

The chapter concerning poisoning was compiled by Z. Vermouzek, the chief of the Free Wings Project. We want to thank him also for his remarkable efforts in detecting illegal cruelty and violence performed on birds.

The greatest thanks, however, belong to our extraordinary friend and an exceptional man Petr Horák, who couldn't participate in this paper and work with us any more. He has the greatest credit for protection and survey of birds of prey, especially the Sea Eagle in South Moravia.

Zusammenfassung

Die vorliegende Arbeit fasst die Entwicklung der tschechischen Seeadlerpopulation (*Haliaeetus albicilla*) zusammen. Ende des 19. Jahrhunderts war der Seeadler in der Tschechischen Republik als Brutvogel ausgestorben. Die letzte bekannte Brut fand 1992 in Südböhmen statt. Nach einer rund 100jährigen Pause – Mitte der 80er Jahre des 20. Jahrhunderts – begann die Art in zwei Kerngebieten in der Tschechischen Republik (Südböhmen und Südmähren) erneut zu brüten. Die südböhmi-

sche Brutpopulation wurde dabei durch ein Wiederansiedlungsprojekt gestützt (1978–1985 wurden in Summe 9 Individuen freigelassen). In der Folge besiedelte der Seeadler fast die gesamte Tschechische Republik. Im Jahr 2000 waren 25 Reviere besetzt, 2005 44 (eine Zunahme von 76%) und 2007 wurden bis zu 55 Brutreviere verzeichnet (eine Zunahme um 120% in 7 Jahren). Der Großteil der Population brütet in Tieflandgebieten mit einem hohen Angebot an Teichen oder Feuchtgebieten. Die höchstgelegene Brut wurde in einer Höhe von 700–750 m Höhe ü. d. M. bestätigt. Die bedeutendsten Überwinterungsgebiete sind Südmähren und Třeboňsko in Südböhmen. Vögel aus Polen (6), Finnland (2), Estland (1) und Deutschland (1) wurden in der Tschechischen Republik angetroffen. Die Nahrung der Seeadler in Tschechien besteht vorwiegend aus Fisch und Wassergeflügel. Lokal wird ein höherer Anteil an Säugetieren festgestellt (vorwiegend Kadaver oder Eingeweide von Huftieren oder Feldmäuse *Microtus arvalis*). Zum Schutz der Adler wurden 3 Special Protection Areas (SPAs, besondere Schutzgebiete nach der EU-Vogelschutzrichtlinie) innerhalb des Natura 2000 Projekts ausgewiesen (Třeboňsko, Pálava und der mittlere Stausee von Nové Mlýny). Ein erhebliches Artenschutzproblem der letzten Jahre stellen Vergiftungen mit Carbofuran dar. In den Jahren 2003 bis 2008 wurden insgesamt 16 Individuen nachweislich oder mutmaßlich vergiftet. Aus demselben Zeitraum wurden zwei geschossene Seeadler gemeldet und zwei Nester wurden von Menschen zerstört. Der Beitrag schließt mit einer umfassenden Bibliografie zum Seeadler in der Tschechischen Republik.

Souhrn

Práce shrnuje vývoj populace orla mořského (*Haliaeetus albicilla*) v České republice. Orel mořský přestal na území dnešní ČR hnízdit koncem 19. století. Poslední známé hnízdění proběhlo v r. 1882 v jižních Čechách. Po více než stoleté přestávce začal orel mořský v České republice opět hnízdit v polovině 80. let 20. století, a to ve dvou jádrových oblastech (jižní Čechy a jižní Morava). Hnízdění v jižních Čechách bylo částečně podpořeno reintrodukčním projektem (v letech 1978–1985 bylo vypuštěno celkem 9 ptáků od německého chovatele Clause Fentzloffa). Následně orel mořský kolonizoval téměř celé území státu. V r. 2000 bylo známo 25 obsazených teritorií, v r. 2005 již 44 teritorií (nárůst 76%) a v r. 2007 až 55 teritorií (tj. nárůst o 120% během 7 let). Většina populace hnízdí v nížinných oblastech s vysokým zastoupením rybníků či mokřadů. Nejvýše položené prokázané hnízdění bylo v nadmořské výšce 700–750 m n.m. (Brdy, Šumava). Nejdůležitějšími zimovišti jsou jižní Morava a Třeboňsko. Z cizích kroužkovanců

byli v ČR zjištěni ptáci z Polska (6), Finska (2), Estonska (1) a Německa (1). Potravou orla mořského jsou v ČR především ryby a vodní ptáci. Lokálně je zjišťováno i vyšší zastoupení savců (především zdechliny nebo vývrhy spárkaté zvěře, příp. hraboši polní). Pro ochranu orla mořského byly vyhlášeny tři ptačí oblasti v rámci soustavy Natura 2000 (Třeboňsko, Pálava a Střední nádrž vodního díla Nové Mlýny). V posledních letech se staly významných ochranným problémem otravy karbofuranem. V období let 2003–2008 bylo takto prokazatelně nebo pravděpodobně otráveno 16 ptáků. Z téhož období jsou také známy 2 případy zástřelů a 2 případy člověkem záměrně zničených hnízd. Součástí práce je i úplný seznam publikací o orlu mořském z území ČR.

References

- ANDRESKA J. (1986): Orel mořský vyhníždil na Třeboňsku. [White-tailed Eagle bred in the Třeboň region]. — *Naši přírodou* **6** (11): 258–259. [in Czech]
- CHYTIL J. (1997): Jižní Morava a letošní ornitologická překvapení. [South Moravia and this year's ornithological surprises]. — *Ptačí svět* **4** (4): 6. [in Czech]
- CHYTIL J. & P. MACHÁČEK (2000): Střední nádrž VDNM. [Nové Mlýny middle reservoir]. — *Sylvia* **36** (1): 15–20. [in Czech]
- ČERNÝ W. (1961): Rezervace Velký Tisý jako zimoviště orlů mořských. [Velký Tisý reserve as a wintering place of White-tailed Eagles]. — *Ochrana přírody* **16** (4): 107–110. [in Czech]
- GRAMSZ B., MURASZKO M., MURASZKO T. & A. JEDROCHA (2004): Pierwsze stwierdzenie legów bielika *Haliaeetus albicilla* w Górach Izerskich (Sudety Zachodnie). [The first confirmed breeding of White-tailed Eagle *Haliaeetus albicilla* in Górze Izerskie Mts.]. — *Przyroda Sudetów* **7**: 169–172. [in Polish with German and Czech summaries]
- HAPLA F. (1912): Vzácné úlovky. [Rare catches]. — *Lovecký obzor* **15**: 156. [in Czech]
- HLÁSEK J. (1979): Třeboňsko, významné zimoviště orlů mořských. [The Třeboň region, important wintering place of White-tailed Eagles]. — *Živa* **27** (4): 150–151. [in Czech]
- HORA J., MARHOUL P. & T. URBAN (2002): Natura 2000 v České republice – Návrh ptačích oblastí. [Natura 2000 in the Czech Republic: Proposal of Special Protection Areas]. — ČSO, Praha. [in Czech]
- HORÁK P. (2003): Hnízdění orla mořského (*Haliaeetus albicilla*) na jižní Moravě v letech 1984–2002 a příčiny jeho hnízdních neúspěchů. [Breeding of the White-tailed Sea Eagle (*Haliaeetus albicilla*) in South Moravia in 1984–2002 and the causes of breeding failures]. — *Crex – Zpravodaj Jihomoravské pobočky ČSO* **20**: 19–33. [in Czech with English summary]
- HORÁK P. (2004): Úspěšné hnízdění orla mořského (*Haliaeetus albicilla*) na jižní Moravě v roce 2004. [The successful breeding of the White-tailed Sea Eagle (*Haliaeetus albicilla*) in South Moravia in 2004]. — *Crex – Zpravodaj Jihomoravské pobočky ČSO* **23–24**: 36–40. [in Czech with English summary]
- HORÁK P. (2006): Hnízdění orla mořského (*Haliaeetus albicilla*) na jižní Moravě v roce 2005. [The nesting of the White-tailed Sea Eagle (*Haliaeetus albicilla*) in South Moravia in 2005]. — *Crex – Zpravodaj Jihomoravské pobočky ČSO* **26**: 23–26. [in Czech with English summary]
- HUDEČ K. & K. ŠTASTNÝ (eds.) (2005): Fauna ČR. Ptáci 2/I. 2nd edition. [The fauna of the Czech Republic – Birds, Vol. II.]. — Academia, Praha, 61–68; 1160. [in Czech with German summary]
- KARÁSEK J. (1922): Řídké zjevy ptačí z Moravy. [Rare bird records from Moravia]. — *Věda přírodní* **3**: 92–93. [in Czech]
- KARÁSEK J. (1923): Ornithologická pozorování na lednických rybnících. [Ornithological observations from the Lednice fishponds]. — *Věda přírodní* **4**: 185–187. [in Czech]
- KUX Z. (1944): Jihomoravské ornithologické zvláštnosti. [South Moravian ornithological specialities]. — *Stráž myslivosti* **22** (16): 138–139. [in Czech]
- LITERÁK I., MRLÍK V., HOVORKOVÁ A., MIKULÍČEK P., LENGUEL J., ŠTASTNÝ K., ČEPÁK J. & L. DUBSKÁ (2007): Origin and genetic structure of White-tailed Sea Eagles (*Haliaeetus albicilla*) in the Czech Republic: an analysis of breeding distribution, ringing data and DNA microsatellites. — *European Journal of Wildlife Research* **53** (3): 195–203.
- MRLÍK V. (1999b): Orli mořští (*Haliaeetus albicilla*) na jižní Moravě v období zimy 1997/98. [The White-tailed Sea Eagle (*Haliaeetus albicilla*) in southern Moravia during the winter 1997/98]. — *Crex – Zpravodaj Jihomoravské pobočky ČSO* **14**: 20–28. [in Czech with English summary]
- MRLÍK V. (2000): Orli mořští (*Haliaeetus albicilla*) na jižní Moravě v období zimy 1998/99. [The White-tailed Sea Eagle (*Haliaeetus albicilla*) in South Moravia during the winter 1998/99]. — *Crex – Zpravodaj Jihomoravské pobočky ČSO* **16**: 27–32. [in Czech with English summary]
- MRLÍK V. (2002): Jihomoravská populace orlů mořských (*Haliaeetus albicilla*) v zimě 1999/2000. [The South Moravian White-tailed Sea Eagle (*Haliaeetus albicilla*) population during the winter 1999/2000]. — *Crex – Zpravodaj Jihomoravské pobočky ČSO* **18**: 51–54. [in Czech with English summary]
- PALUCKI A. (1999): Pierwsze stwierdzenie legowego bielika *Haliaeetus albicilla* w Karkonoszach. [The first confirmed breeding of the White-tailed Eagle *Haliaeetus albicilla* in the Karkonosze Mts.]. — *Przyroda Sudetów Zachodnich* **2**: 81–82. [in Polish with German and Czech summaries]
- PROCHÁZKA J. (2002): Bestand, Verbreitung und Schutz des Seeadlers (*Haliaeetus albicilla*) in der Tschechischen Republik. — *Corax* **19** (1): 96–101.
- PROCHÁZKA J. (2008): Orel mořský (*Haliaeetus albicilla*) – orliak mořský – White-tailed Eagle. In ČEPÁK J., KLVÁNA P., ŠKOPEK J., SCHRÖPFER L., JELÍNEK M., HOŘÁK D., FORMÁNEK J. & J. ŽÁRYBNICKÝ (eds.), *Atlas migrace ptáků České a Slovenské republiky*. [Czech and Slovak Bird Migration Atlas] — Aventinum, Praha, 279–281. [in Czech with English summary]
- ŠEVČÍK J. (1985): Hnízdění orla mořského na Třeboňsku. [Breeding of the White-tailed Eagle in the Třeboň region]. — *Živa* **33** (2): 76. [in Czech]
- ŠEVČÍK J. (1987a): Hnízdění orla mořského (*Haliaeetus albicilla*) na Třeboňsku. [Nesting of the White-tailed Eagle (*Haliaeetus albicilla*) in the Třeboň region (south Bohemia)]. — *Buteo* **2**: 41–50. [in Czech with English summary]
- ŠEVČÍK J. (1989): Vznik hnízdní populace orla mořského na Třeboňsku. [The origin of the White-tailed Eagle breeding population in Třeboň region]. — *Živa* **37** (3): 132–134. [in Czech]

- ŠEVČÍK J. (1997): Několik poznatků o populaci orla mořského (*Haliaeetus albicilla*) na Třeboňsku a její ochraně. [Notes on the population of the White-tailed Eagle (*Haliaeetus albicilla*) in the Třeboňsko Biosphere Reserve and on problems of its conservation]. — *Buteo* **9**: 103–108. [in Czech with English summary]
- ŠEVČÍK J. & Z. VERMOUZEK (2006): Pták roku 2006 – Orel mořský. [White-tailed Eagle – Bird of the Year 2006]. — Czech Society for Ornithology, Prague, 1–16. [in Czech with English summary]
- ŠÍR V. (1890): Ptactvo české. Svazek I. [Czech Birds. Vol. I.]. — Nakl. M. Knapp, Praha, 25–30. [in Czech]
- ŠTASTNÝ K. (1974): Pozdní datum výskytu orla mořského (*Haliaeetus albicilla* L.) na Třeboňsku. [Late record of a White-tailed Eagle (*Haliaeetus albicilla* L.) in the Třeboň region]. — Sborník Jihočeského muzea České Budějovice, Přírodní vědy **14** (suppl. 2): 87–88. [in Czech]
- ŠTASTNÝ K., BEJČEK V. & K. HUDEC (2006): Atlas hnízdního rozšíření ptáků v České republice 2001–2003. [Atlas of Breeding Birds in the Czech Republic 2001–2003]. — Aventinum, Praha, 86–87. [in Czech with English summary]
- TRPÁK P. (1987): Program "Haliaeetus" – úspěšná reintrodukce vyhynělého druhu. Project "Haliaeetus" – a successful reintroduction of an extinct species. — Památky a příroda **12** (9): 545–554. [in Czech]
- ## Additional Bibliography
- ANDRESKA J. (1981): Odchov orlů mořských v jižních Čechách. [Breeding of White-tailed Eagles in South Bohemia]. — Naší přírodou **1** (3): 4–5. [in Czech]
- ANDRESKA J. (1983): Orel mořský v jižních Čechách. [The White-tailed Eagle in South Bohemia]. — Naší přírodou **3** (7): 9–10. [in Czech]
- ANDRESKA J., HLÁSEK J., KAŇKA M., ŠEVČÍK J. & P. TRPÁK (1987): Stabilizace populace orla mořského (*Haliaeetus albicilla*) v CHKO Třeboňsko. [Stabilization of the population of White-tailed Eagle (*Haliaeetus albicilla*) in the protected landscape area Třeboňsko]. — Bulletin sekce ochrany přírody vedoucího pracoviště vědeckotechnického rozvoje **7**: 1–58. [in Czech]
- BARTUŠKA V. (1998): Nález zhojené zlomeniny u orla mořského (*Haliaeetus albicilla*) na Třeboňsku. [Finding of a healed fracture in a White-tailed Sea Eagle (*Haliaeetus albicilla*) in the Třeboň Biosphere Reserve]. — *Buteo* **10**: 31–34. [in Czech with English summary]
- BEJČEK V., ŠTASTNÝ K. & K. HUDEC (1995): Atlas zimního rozšíření ptáků v České republice 1982–1985. [Atlas of winter distribution of birds in Czech Republic 1982–1985]. — H & H, Jinočany, 85–86. [in Czech]
- FRIČ A. (1872): Die Wirbelthiere Böhmens. Verzeichnis aller in Böhmen beobachteten Säugetiere, Vögel, Amphibien und Fische. — Archiv der naturwissenschaftliche Landesdurchforschung von Böhmen II., Praha, 38. [in German and Czech]
- HLÁSEK J. (1982): Zimování orlů mořských (*Haliaeetus albicilla*) na Třeboňsku. [Wintering of the White-tailed Eagle (*Haliaeetus albicilla*) in the Třeboň region]. In ZEMAN J. (ed.), Sborník příspěvků k ornitologickému výzkumu Jihočeského kraje. — Jihočeské muzeum, České Budějovice, 39–45. [in Czech with German summary]
- HORÁK P. (1989): Hnízdění orla mořského na jižní Moravě. [Breeding of the White-tailed Sea Eagle in South Moravia]. — Živa **37** (3): 134–136. [in Czech]
- HUDEK K. & W. ČERNÝ (eds.) (1977): Fauna ČSSR – Ptáci II. [The Fauna of Czechoslovakia – Birds, Vol. II.]. — Academia, Praha, 46–53; 860–861. [in Czech with German summary]
- HUDEK K., KONDELKA D. & I. NOVOTNÝ (1966): Ptactvo Slezska. [Birds of Silesia]. — Slezské muzeum, Opava, 106–107. [in Czech with German summary]
- JIRŠÍK J. (1941): Naši dravci. [Our Raptors]. — Otakar Janáček, Praha, 170–175. [in Czech]
- JIRŠÍK J. (1948): Naši dravci. 2nd edition. [Our Raptors]. — Mladá fronta, Praha, 192–198. [in Czech]
- KAMINIECKÁ B. (2006): Krutá smrt orlů mořských. [The cruel death of White-tailed Eagles]. — Ochrana přírody **61** (4): 126–127. [in Czech]
- KÚRKA A. (1986): Kdo zabil orlici? [Who killed the female eagle?]. — Naší přírodou **6** (5): 110–111. [in Czech]
- KÚRKA P. (1997): Život mořských orlů na severu Čech. [The life of White-tailed Eagles in North Bohemia]. — Jizerské a Lužické hory **2** (7–8): 8–10. [in Czech]
- MARTÍŠKO J. (ed.) (1994): Hnízdní rozšíření ptáků – Jihomoravský region. Část 1. – Nepěvci. [Breeding distribution of birds – South Moravian region. Vol. 1. – Non-Passerines]. — MZM & ZO ČSOP Palava, Brno, 90–91. [in Czech]
- MARTÍŠKO J. & K. MARTÍŠKOVÁ (1995): K výskytu orla mořského (*Haliaeetus albicilla*) na jižní Moravě v letech 1973–1993. [On the occurrence of the White-tailed Eagle (*Haliaeetus albicilla*) in South Moravia 1973–1993]. — Zpravodaj Jihomoravské pobočky ČSO **6**: 23–25. [in Czech]
- MRLIK V. (1999a): Určení věku orla mořského (*Haliaeetus albicilla*) v terénu. [Ageing of White-tailed Sea Eagles (*Haliaeetus albicilla*)]. — Crex – Zpravodaj Jihomoravské pobočky ČSO **14**: 9–16. [in Czech with English summary]
- MRLIK V. & P. HORÁK (1996): White-tailed Sea Eagle (*Haliaeetus albicilla*) in Southern Moravia. In MEYBURG B.U. & R.D. CHANCELLOR (eds.): Eagle Studies. — WWGBP, Berlin, London, Paris, 143–145.
- MÜLLER, A. (1846): Der Seeadler in Mähren. — Moravia **9**: 47–48.
- PECINA P. (2007): Repatriace orlů mořských v jižních Čechách. — Myslivost **55** (10): 16–21. [in Czech]
- PTÁČEK M. (1998): Odchov orla mořského (*Haliaeetus albicilla*) v roce 1998. [Breeding of the White-tailed Eagle (*Haliaeetus albicilla*) in 1998]. — Fauna Bohemiae Septentrionalis **23**: 41–42. [in Czech]
- ŘEPA P. (2006): Hnízdění orla mořského (*Haliaeetus albicilla*) v západních Čechách. [Breeding of the White-tailed Eagle in West Bohemia]. — Sluka **3**: 31–35. [in Czech]
- ŠEVČÍK J. (1980): Orel mořský v Evropě a jeho ochrana. [The White-tailed Eagle in Europe and its conservation]. — Památky a příroda **5** (5): 298–301. [in Czech]
- ŠEVČÍK J. (1987b): Orel mořský na Třeboňsku, problematika zimování a hnízdění. [The White-tailed Eagle in the Třeboň region, problems of wintering and breeding]. In SITKO J. & P. TRPÁK (eds.): Dravci 1985, sborník z ornitologické konference, Přerov 14.–16.11.1985. [Raptors 1985 – Proceedings from the ornithological conference in Přerov, 14–16 November 1985]. — SÚPPOP, Praha, 229–234. [in Czech]
- ŠEVČÍK J. (2001): Třeboňská hnízdní populace orla mořského (*Haliaeetus albicilla*) v roce 2001. [Status of the White-tailed Eagle *Haliaeetus albicilla* breeding population in the Třeboň region in 2001]. — Zprávy České společnosti ornitologické **53**: 19–21. [in Czech with English summary]

- ŠKORPIKOVÁ V. (2006a): Orel mořský (*Haliaeetus albicilla*) na Znojmsku v roce 2006 – neveselá historie. [The White-tailed Eagle (*Haliaeetus albicilla*) in the Znojmo region in 2006 – a gloomy story]. — *Crex – Zpravodaj Jihomoravské pobočky ČSO* **26**: 27–32. [in Czech with English summary]
- ŠKORPIKOVÁ V. (2006b): Otrávené návnady stále zabíjejí. [Poisoned baits still killing]. — *Ochrana přírody* **61** (7): 219–220. [in Czech]
- ŠŤASTNÝ K., BEJČEK V. & K. HUDEC (1996): Atlas hnízdního rozšíření ptáků v České republice 1985–1989. [Atlas of breeding birds in the Czech Republic 1985–1989]. — H&H, Jinočany, 86–87. [in Czech]
- ŠŤASTNÝ K., RANDÍK A. & K. HUDEC (1987): Atlas hnízdního rozšíření ptáků v ČSSR 1973/77. [Atlas of breeding birds in Czechoslovakia 1973/1977]. — Academia, Praha, 457. [in Czech].
- TRPÁK P. (1982a): Vypuštění orlů mořských na Třeboňsku. [Release of White-tailed Eagles in the Třeboň region]. — *Památky a příroda* **7** (4): 253. [in Czech]
- TRPÁK P. (1982b): Nový host Starého jezera. [A new guest at 'Staré jezero']. — *Naší přírodou* **2** (4): 17. [in Czech]
- TRPÁK P. (1983): Orlové Jiří a Tisý na Tisém. [Eagles 'Jiří' and 'Tisý' at the Tisý fishpond]. — *Památky a příroda* **8** (5): 317–318. [in Czech]
- TRPÁK P. (1984): Triton vypuštěna na Tisém. ['Triton' released at Tisý fishpond]. — *Památky a příroda* **9** (5): 314–315. [in Czech]
- TRPÁK P. (1985): Projekt *Haliaeetus* pokračuje. [Project 'Haliaeetus' continues]. — *Naší přírodou* **5** (7): 3. [in Czech]
- TRPÁK P. (1986): Orli mořští opět hnízdí na Třeboňsku. [White-tailed Eagles breed again in the Třeboň region]. — *Nika* **7** (9): 206–207. [in Czech]
- TRPÁK P. & C. FENTZLOFF (1989): Die Wiederbesiedlung Süd-Böhmen mit Seeadlern. — *Greifvögel und Falknerei. Jahrbuch des Deutschen Falkenordens* 1988: 50–52.
- VONDRAČEK J. (2005): Orel mořský v severních Čechách. [Der Seeadler in Nordböhmen/The White-tailed Eagle in Northern Bohemia]. — *Fauna Bohemiae Septentrionalis* **30**: 163–170. [in Czech with English summary]

Authors' addresses:

Tomáš BĚLKA
Družstevní 918, CZ-517 21 Týniště nad Orlicí
Czech Republic
E-Mail: tomas.belka@tiscali.cz

David HORAL
Agency for Nature Conservation and
Landscape Protection of the Czech Republic
Kotlářská 51, CZ-657 20 Brno, Czech Republic
E-mail: david.horal@seznam.cz

Appendix I: Ringing and recovery data of White-tailed Eagles ringed and/or recovered in the Czech Republic. — *Beringungs- und Funddaten von in der Tschechischen Republik beringten und/oder gefundenen Seeadlern.*

Ring No.	Ringing date	Age at ringing	Ringing place	Finding place	Finding date	Distance (km)	Remarks
A955452	05/06/53	Nestling	53.41N 21.36E PL	49.50N 18.15E CZ	15/01/54	485	Shot
E9706	07/06/84	Nestling	63.00N 23.00E FIN	48.54N 16.32E CZ	26/02/07	616	Collision with electrical wires
AP7868	24/05/90	Nestling	51.34N 15.43E PL	49.52N 13.15E CZ	16/04/91	256	Shot
L8639	12/05/96	Nestling	49.03N 14.26E CZ	49.12N 14.53E CZ	21/12/00	36	Shot
E9832	03/06/96	Nestling	62.55N 22.00N FIN	47.55N 18.30E SK	27/03/97	1680	Poisoned by chemicals, treated and released
G425	09/06/97	Nestling	58.20N 26.00E EST	48.58N 16.36E CZ	18/03/99	1208	Dead
L7044	13/05/99	Nestling	49.02N 14.44E CZ	47.55N 16.25E A	25/03/00	175	Poisoned
L7049	14/05/99	Nestling	49.09N 14.39E CZ	49.09N 15.08E CZ	30/05/06	36	Dead
AS7647	26/05/99	Nestling	52.12N 14.48E PL	49.07N 14.25E CZ	12/03/07	344	Dead
AA4377	07/06/01	Nestling	51.53N 14.18E GER	49.07N 14.25E CZ	15/02/06	307	Poisoned
E9466	11/06/01	Nestling	68.20N 25.50N FIN	49.54N 16.13E CZ	22/02/04	2114	Poisoned
AX817	03/05/03	Nestling	51.34N 22.21E PL	49.04N 14.22E CZ	10/12/03	630	Ring read
LB2234	16/05/03	Nestling	50.38N 14.43E CZ	49.02N 14.49E CZ	07/02/05	177	Ring read
LB2236	18/05/03	Nestling	50.34N 14.42E CZ	49.22N 13.45E CZ	04/03/06	149	Dead
AX0785	20/05/03	Nestling	52.09N 15.09E PL	50.08N 15.18E CZ	15/03/04	224	Collision with electrical wires
AX782	31/05/03	Nestling	52.43N 15.48E PL	48.46N 16.16E CZ	24/11/04	440	Collision with electrical wires
LB4576	05/05/04	Nestling	49.40N 15.11E CZ	49.03N 14.43E CZ	28/02/05	76	Ring read
LB2921	18/10/04	1st year	49.03N 14.34 CZ	49.02N 14.49E CZ	11/03/05	7	Ring read
LB1279	09/05/05	Nestling	49.12N 14.53E CZ	49.12N 14.53E CZ	10/09/05	0	Ring found only
LB5301	17/05/05	Nestling	49.10N 14.40E CZ	49.03N 14.26E CZ	13/10/05	21	Ring read